These are some notes from the **NCEP / EMC Global Climate and Weather Modeling Branch's** bi-weekly briefings for Aug 18 and Sep 1, 2005. The individual meeting notes have more details (questions may be addressed to kenneth.campana@noaa.gov). Please check: *http://www.emc.ncep.noaa.gov/gmb/KENS_PLACE/Glob_MapBrief*

Global Spectral Model – 25th Anniversary:

The global spectral model went into operations on 8/12/1980. Joe Sela, EMC, presented some insights into the early days of spectral modeling, and reviewed its history as NMC/NCEP's computer power increased.

Invoking WRF Post-processing from the GFS:

The presentation envisions using the Weather Research and Forecasting (WRF) post-processing module within the Global Forecast System. It would unify model validation efforts for both regional and global systems at NCEP and make it easier to directly compare them. WRF is currently being tested in EMC's Mesoscale Modeling Branch (http://www.wrf-model.org). Discussion centered on using ESMF (Earth System Modeling Framework) components to provide the necessary links within the GFS.

Use of ARM data to investigate GFS Surface Albedo:

Relative to Atmospheric Radiation Measurement (ARM) data, the GFS underestimates upward shortwave (SW) at the earth's surface in both clear sky and all sky conditions. ARM data provides several SW radiative flux components at the earth's surface (downward Total, downward Diffuse, and upward Total), but it would be useful to split the upward Total flux into direct and diffuse parts. Using data for certain overcast conditions (cloud fraction=1, with almost all flux assumed to be diffuse), one can estimate the surface albedo for diffuse flux. Then observed upward direct SW flux can be estimated using the derived diffuse albedo. It is found that the diffuse albedo depends on surface type, but not on solar zenith angle, whereas the direct albedo depends strongly on solar zenith angle. Comparison of GFS and ARM data shows GFS direct beam dependence on solar zenith angle is much weaker than observed. Model sensitivity to corrected surface albedo will be tested in a single column version of the GFS.

Initializing Ensemble Forecasts to Reduce Model Drift:

To improve model forecasts and reduce drift-induced errors, one should get both the model and initial conditions as close to nature as possible. This is accomplished by determining a 'mapping vector' from nature to model 'attractor'. Tests with a simple 3-variable Lorenz (1963) model look promising, with up to a 70% reduction of model error. One of the potential benefits is that there will not be a need for a separate, lead-time-dependent, forecast bias correction. More information may be obtained from Dr. Zoltan Toth (zoltan.toth@noaa.gov).

GFS Diagnostics:

Five-day anomaly correlation scores during August show the current GFS is behind the ECMWF, but ahead of UKMO forecasts in the Northern Hemisphere, and behind both of them in the Southern Hemisphere. GFS rms height errors grew faster than other centers in the first 24 hours, while growing slowest from day1 to day3.

There is concern that model errors with the current T382 model are worse than during the summer-2004 retrospective forecasts. A number of cases in summer 2005 have been rerun using the old T254 GFS, to answer this question. The operational T382 GFS is better in most cases, especially in the stratosphere and higher latitudes, except over Antarctica, south Asia, and the Caribbean/Gulf of Mexico. The latter develops in the 1st 6 hours of the forecast, whereas the error over Asia is slower to develop.